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## SOME NEW BYTHOSCOPIDÆ FROM BRITISH COLUMBIA AND THE SOUTHWEST.

BY E. D. BALL, UTAH AGR. COLLEGE, LOGAN, UTAH.

Every collection of western Bythoscopidæ that the author has examined has had a more or less heterogeneous assemblage of forms closely resembling *Idiocerus alternatus*. These have been somewhat indiscriminately divided between *alternatus*, *ramentosus* and several MS. names of Uhler's in classification, or not determined at all. At the time of publication of the key to this genus,\* the material at hand was not sufficient to warrant the descriptions of these forms, and they were omitted. Since then the author has paid special attention to the collecting of this group in Colorado, and has received a long series of specimens from the Pacific Coast, mainly from the collection of Mr. C. Livingstone. With this material it has been possible to accurately define a number of these species and clear up much of the obscurity in this section of the genus. During the progress of this study several other new species and varieties have been described, and are also presented here.

### *Macropsis bisignata*, n. sp.

Size and form of *apicalis* nearly, slightly more elongate, slightly resembling *misella*, but differently marked. Bright green, the inner half of clavus, the apical cells and all of the membrane testaceous brown. Length: ♀, 5 mm.; ♂, 4 mm. Width, 2 mm.

Head much narrower than posterior angles of pronotum; vertex longer than in *apicalis*, and very slightly angled in front. Face as in *apicalis*, but the front much more inflated; elytra long and rather narrow, heavily clothed with stiff black hairs; Female segment over half longer than the penultimate, the posterior margin rounding, with a small

\*Dav. Acad. Nat. Sci. Proc., Vol. VII. p. 124, 1899.

rounding median notch ; whole segment often elevated so as to give it the appearance of being angularly emarginate from the lateral angles. Male valve nearly twice as long as the ultimate segment, posterior margin rounding, disc convex or slightly angularly elevated.

Colour : deep green, the inner two-thirds of clavus from the pronotum back to the middle, where it is abruptly truncate, the membrane and apical cells reddish brown, elytral hairs black.

Described from twenty-four specimens from Holly, Trinidad, Pueblo, Palmer Lake and Fort Collins, Colo.

*Pediopsis trivialis*, n. sp.

Resembling *viridis*, but larger, as large as *erythrocephala*, but with longer, narrower elytra than in either species. Light green, the male but little darker. Length : ♀, 6 mm.; ♂, 5 mm. Width, 1.5 mm.

Vertex very nearly right angled, slightly more acute than in *erythrocephala*, much more than in *viridis*; pronotum rather narrow, the rugae fine and distinct; elytra long and narrow, with long apical cells.

Colour : female entirely light green, no mark on propleura; male light green, the tips of the elytra often slightly embrowned, the tip of the rostrum an oval spot on the propleura, the apices of the anterior tibiae and the apical segments of all the tarsi black.

Described from twenty-four specimens from Fort Collins, Lamar and Rocky Ford, Colo. In the key this species would follow *erythrocephala*, to which it is allied in size and shape of vertex. The absence of colour markings in either sex and the unmarked propleura of the female will at once distinguish it, however. The larger size and more sharply-angled vertex will separate it from all the other green forms.

*Idiocerus dolosus*, n. sp.

Form and general appearance of *crataegi*, slightly broader and darker. Face and pronotum irregularly immaculate with brown. Length, 5-5.5 mm.; width, 1.8 mm.

Head as broad as in *crataegi*, much broader than in the other deep-headed species. Vertex not as much curved as in *crataegi*, longest against the eyes. Face very deep and straight, front full and rounding as in *Provancheri*; clypeus short, constricted in the middle and much widened just at the apex; elytra similar to those of *crataegi*, inclined to be more flaring, giving the insect a more robust appearance; venation somewhat obscure, three anteapical cells, the outer one short. Female segment shorter than in *crataegi*, the posterior margin broadly rounding,

with a shallow median notch. Male valve transverse, the posterior margin but little rounding, slightly longer than the ultimate segment.

Colour: vertex and face pale yellow, two large angular black spots on the vertex, about their own width from the eyes and almost touching the hind margin; rest of surface irregularly maculate with large brownish fuscous spots, usually a pair between the black spots and another pair below them, the lateral sutures of front and clypeus from antennæ down, including all of apical half of clypeus, except a narrow median line, deep black; pronotum pale, irregularly marked with brownish fuscous, omitting a median line expanded in front; scutellum pale, with a pair of black triangles within the lateral angles, and a pair of spots on disc; elytra smoky brown, the nervures and margins back to the apical cells light.

Described from twenty-four examples from Dolores, Colorado Springs and Fort Collins, Colo.; all from within the mountains. This is a distinct and well-marked species, allied to *crataegi*, but at once distinguished by the more complex venation and large number of spots, as well as the black "Y" of the face.

*Idiocerus formosus*, n. sp.

Smaller and narrower than *lachrymalis*, resembling the European *populi* in size and form, but more heavily marked. Length: ♀, 6 mm.; ♂, 5.25 mm. Width, 1.8 mm.

Vertex long, but little curved; face almost flat, front broad below, but not expanded as much as usual at the antennæ; elytral nervures non-tuberculate, outer apical nervure curving away to costa without forming an anteapical cell, or, at most, a short triangular one. Female segment short, transverse, the middle third produced into a rounded lobe nearly twice as long as the rest of the segment; pygofer moderately long, much inflated, exceeded by the ovipositor by about twice its width. Male valve trisinuate; antennal discs large, about twice longer than wide.

Colour: vertex and face pale greenish yellow, a pair of round black spots on the vertex and a pair of elongate spots against the eye, both pairs of spots connected on their lower margins by a transverse black band; another pair of black spots within and beneath the ocelli, on the front. The black band and spots on the front are sometimes absent in the male. Pronotum grayish or greenish, with irregular fuscous markings on the anterior third; scutellum pale yellow or greenish, usually with the basal angles and a pair of round spots on disc fuscous; elytra varying from

tawny to dark brown, usually iridescent, the apices of the claval nervures and an irregular oblique band back of the clavus milky white. Sometimes there is more or less of milky white between the dark nervures on the base of the corium.

Described from twenty-four specimens from Happy Hollow, Ward, North Park, Salida and Rico, Colo. The face and pronotal markings are similar to *lachrymalis*, while the elytra, especially in the male, are quite different. It should follow that species in the key, from which the small size and long antennal discs will readily separate it.

*Idiocerus concinnus*, n. sp.

Size and general appearance of *brunneus*, more highly coloured, resembling *rufus*, but larger, broader, and with antennal discs. Length, 5.5 mm.; width, 1.75 mm.

Vertex and face moderately broad, much less inflated than in *brunneus*, margins of genæ but slightly rounding; elytra nearly opaque, the venation indistinct; nervures with setigerous punctures; outer anteapical cell present, rather long. Female segment almost twice the length of the penultimate; posterior margin slightly rounded, often slightly sinuate; pygofers stout, moderately long, twice longer than in *brunneus*, nearly half longer than in *amabilis*, the ovipositor exceeding them by its own width. Male valve with a blunt median tooth, distinctly exceeded by the strong lateral angles; antennal plates large, oval.

Colour: Female pale cinnamon brown, the pronotum darker; face and all below yellow. Male darker, especially along the dorsum of elytra, where the dark tergum shows through. Face and below pale yellow, with faint stripes beneath the eyes.

Described from numerous specimens from Vancouver Island, B. C. (Livingstone). This has been received as *rufus*, G. and B., but it is quite distinct. The discs of the male antennæ alone would readily distinguish them. It more closely resembles *brunneus*, from which the third anteapical cell and the distinct genitalia, as well as the absence of spots on vertex, will readily separate it.

*Idiocerus amabilis*, n. sp.

Resembling *amoenus* in form and general appearance, but much stouter and more highly coloured. Pale fulvous brown, with light markings along the median line, and greenish margins to the elytra. Length, 6 mm.; width, 2 mm.

Vertex and face broad and flat; nervures of elytra tuberculate; outer anteapical cell short, the outer nervures often faintly outlined. Female segment half longer than penultimate, very slightly produced on middle half; pygofer short and very stout, but little exceeded by the ovipositor. Male valve transverse, excavated either side of a median tooth. Antennæ with rather large discs, nearly twice longer than wide, and tapering at both ends.

Colour: vertex and upper part of face, down to ocelli, in female, fulvous brown, omitting a median line above, pale creamy below. Male: face creamy, washed with fulvous above and usually greenish below, a brown stripe beneath each eye and usually one on the front. Pronotum fulvous brown, a median stripe and a round spot in the middle of either side white; scutellum fulvous, darker near the basal angles, a definite spot near the apex, and often a pair of irregular ones on the disc; elytra brownish fulvous, shading to greenish on the costa, the sutural margins fuscous, interrupted by a common white spot on the apices of the outer claval nervures and an obscure white band just back of clavus, usually evident on the first two nervures of corium.

Described from twenty-four specimens from Vancouver Island, B. C. (Livingstone), North Park, Home, Gunnison and Salida, Colo.

*Idiocerus femoratus*, n. sp.

Resembling *alternatus*, larger and darker; female with a shorter ovipositor and a longer segment, male with the middle femora greatly inflated, more than five times as large as the anterior ones. Length, 6 mm; width, 2 mm.

Head very broad; vertex distinctly curved, sometimes slightly angled in front; face nearly flat, strongly retreating; venation as in *alternatus*, the outer anteapical cell long and parallel margined. Female segment much longer than in *alternatus*, parallel margined or slightly rounding posteriorly, ovipositor exceeding the moderately-long pygofer by about twice its width. Male antennæ with small oval discs on long setæ. Intermediate femora in male from five to ten times as large as the anterior ones, over half as wide as long.

Colour: vertex with a pair of rather large round spots, usually obscured by a band of irregular fuscous irrorations that extend down to the face; lower part of face with a few brown irrorations in female, usually traces of four brown stripes in male; pronotum irregularly brownish and milky white, with a few black spots on the anterior

submargin; scutellum with the basal angles, a median line and two discal dots fuscous; elytra smoky subhyaline, the nervures darker, interrupted with light; legs light, all the femora and tibiae lineate with fuscous on the outer (upper) faces.

Described from twenty-four examples from the mountains west of Fort Collins, Ward, Palmer Lake, Marshall Pass and Lizard Head, Colo. The larger size and darker face will distinguish the female of this species from *alternatus*; the enlarged femora render the male quite distinct in the genus.

*Idiocerus ensiger*, n. sp.

Size and form of *alternatus* nearly, slightly longer, but with a remarkably long ovipositor in the female. Colour pale chestnut and white. Length, 5.25 mm.; width, 1.8 mm.

Face moderately convex, retreating from the narrow vertex, front short, broad, sharply angulate at antennæ; elytra with a moderately long outer anteapical cell. Female segment moderately long, transverse, the posterior margin straight; ovipositor as long as the rest of the body, exceeding the long pygofers by more than one-third, sometimes almost half, of its length.

Colour: vertex and face pale chestnut, a pair of small spots on vertex and the ocelli dark; pronotum and scutellum chestnut, the basal angles of the latter sometimes dark; elytra subhyaline, with a pale cinnamon-brown reflection, a few of the nervures darkened and usually a light stripe along the suture, which may be emphasized as a pair of spots or continued as a stripe on the pronotum.

Described from nine females taken at Home and Dutch Georges, both mountain places on the Poudre River, Colo. Very few species of *Idiocerus* are sufficiently distinct to be described from one sex alone, especially the female, but the remarkable sword-like ovipositor of this species would seem to warrant that distinction.

*Idiocerus musteus*, n. sp.

Form and structure of *femoratus*, but smaller. Dull cinereous, clouded with pale olive and brown, a pair of spots on the vertex and usually a few marks on pronotum and scutellum. Length, 5 mm.; width, 1.8 mm.

Face but slightly convex, very deep, margins of genæ straight or slightly emarginate, not angled; elytra long, narrow at apex; nervures with setigerous punctures; outer anteapical cell long and narrow. Female



segment long, broadly rounding posteriorly; pygofers moderately long, much inflated, the ovipositor exceeding them by about twice its width. Male antennæ with very slight black-marked enlargements some distance from the apex.

Colour: face pale yellow, a pair of round black spots on vertex, and sometimes a cloud of olive brown between them; pronotum olive and cinereous, with about six small black spots on the middle half; scutellum pale yellow, with its basal angles and a pair of spots on disc brown or black; elytra pale subhyaline olive brown, the tips of the outer claval nervures and sometimes a spot on the inner sector of corium just beyond apex of clavus milky white; legs and below pale.

Described from twenty-four specimens from Vancouver Island, B. C. These, together with the specimens of *concinus* and *amabilis*, were part of a nice lot of Jassids sent me several years ago by Mr. Livingstone.

*Idiocerus verrucosus*, n. sp.

Form and general appearance of *brunneus*, but much smaller, with a long anteapical cell and simple antennæ. Pale cinnamon brown, with heavy dark markings on vertex and front. Length, 4.25 mm.; width, 1.5 mm.

Face broad and very deep, not retreating until nearly the middle of front, sides of genæ perfectly straight; pronotum very short and broad; elytra with the nervures heavily tuberculate, the outer anteapical cell long and narrow. Female segment long, slightly rounding posteriorly; pygofers moderately long and stout, much longer and stouter than in *brunneus*, exceeded by the ovipositor by about twice its width. Male valve long, but feebly excavated each side the middle. Male antennæ with a very fine filament.

Colour: pale cinnamon brown, tinged with fuscous in the male; vertex and face down to antennæ with a dark brown or fuscous band, the black spots on vertex surrounded by light circles, and the ocelli in the inner ends of transverse light dashes. In light examples this band may be wanting or only present as a pair of black marks against the eyes. Pronotum and scutellum marked as in *musteus*.

Described from nine specimens from Dutch Georges and Ward, Colo.

*Idiocerus morosus*, n. sp.

Form and general appearance of *alternatus* nearly, but smaller, darker, and with a deeper head; structure of *verrucosus* nearly.

Male antennæ with large, nearly circular plates. Length, 4.25 mm.; width, 1.4 mm.

Head much deeper than in *alternatus*, nearly perpendicular down to the antennæ in the female, sloping in the male; venation as in *alternatus*. Female segment slightly rounding posteriorly; pygofer long and slender, exceeded by the ovipositor by two and one-half times its width. Male antennæ with large oval or nearly round discs, about twice as large as in *alternatus*.

Colour: vertex and face pale creamy, a pair of large round spots on vertex; face in the female irregularly mottled with rust brown or fuscous, omitting a pair of circles around the spots on vertex, a pair of oblique spots just outside the ocelli, and a broad stripe down the front. Male face with a pair of crescentiform fuscous dashes outside the spots on vertex, a pair of narrow brown lines down the front, a wider pair on the sutures, and a still wider pair outside; the outer pair and sometimes the middle ones fuscous. Dorsal markings as in *alternatus*, usually somewhat darker in the male.

Described from twenty-four specimens from Alder, Fort Collins, Colo., and the mountains west of the latter place up to 8,500 feet. The small size, deep head and attenuate ovipositor readily separate this from *alternatus*. The antennal plates alone will distinguish it from *verrucosus*, to which in head characters and colour pattern it is closely allied.

*Idiocerus obstinatus*, n. sp.

Resembling *dolosus* in form and colour, but smaller. Size of *verrucosus* nearly, but with broader elytra. Length, 4.5 mm.; width, 1.5 mm.

Vertex shortest in the middle; face sloping, but slightly convex; elytra inclined to be flaring, narrowing before apex; outer anteapical cell long and narrow. Male valve short and strongly trisinate; antennæ with a moderate-sized oval disc.

Colour: vertex and face creamy yellow, a pair of very small round spots on vertex, a pair of brown dashes outside of these, a median stripe down face, fuscous in the middle and constricted above the ocelli, and a pair of shining black stripes beneath the eyes; pronotum washed with very pale brown, a few irregular spots in front; scutellum pale, with the angles and a pair of spots on the disc brown; elytra milky subhyaline, the nervures heavily fuscous, omitting the base, the costal margins,



a transverse band back of clavus and a few spots on disc; legs and beneath pale.

Described from two males from Arizona. This is a very distinct form, resembling *crataegi* and *dolosus* in colour marking, but belonging to the *alternatus* group in structural characters.

*Idiocerus suturalis*, Fitch.

This is either a very variable species in colour markings, and somewhat so in structural characters, or else two or more specific types are commonly referred to under this name. In the material before me there are four forms represented, all agreeing in general form and size, but possessing slight structural differences, and marked coloration characters. In general these forms have not been found associated in such a way as to indicate specific identity, but, on the other hand, in no case has the life-history been sufficiently worked out or enough specimens collected to enable one to accurately define specific limits, and it has been thought best to characterize them, for the present at least, as varieties.

Variety *suturalis*, Fitch (typical form).

The typical form is of a yellowish-green colour, becoming lighter towards the margin, with the basal angles of the scutellum and the scutellar and sutural margins of elytra included in a confluent stripe of a rich brown. This stripe narrows down at apex of clavus and then widens and gives way to a smoky area on the membrane. The outer anteapical cell is usually present in this form, and the antennal disc of the male is moderately large, oval, and about half longer than wide.

This form was described from N. Y., and is at hand from various points in the mountains of Colo., and has been examined from N. Mex. The other references to this species either refer to this form or the next.

Variety *lunaris*, n. var.

Size and form of typical *suturalis*, the outer anteapical cell wanting or rarely present as a small triangle in the apex of the costal nervure. Male antennæ with the filament slightly swollen on the apical half and dark coloured, scarcely to be called a disc.

Colour: pale green, a dorsal stripe wider than in *suturalis*, covering the entire scutellum and extending forward to the posterior margin of pronotum, deep fuscous. This stripe is interrupted on the middle of the clavus by a broad, light crescent, and marked at the apex by a line.

Described from twenty-four examples from Palmer Lake and Fort Collins, Colo., and Beula, N. Mex. This form has also been examined in the past from N. Y.

Variety *continuus*, n. var.

Somewhat stouter than *lunaris*, the outer anteapical rarely present as in that form, and the antennæ in male dark, but scarcely swollen apically.

Colour: pale green or yellowish green, the dorsal stripe even broader than in *lunaris*, covering the whole disc of the pronotum and extending forward nearly to the margin on the median line, black or very dark brown. This stripe is as wide as the scutellum, and is constricted at apex of clavus, beyond which it is smoky.

Described from twenty-four specimens from Ward, Antonito, Estes Park and Rico, Colo.

Variety *vagus*, n. var.

Slightly larger than *suturalis*, even broader than *continuus*, especially in the female, outer anteapical cell rarely present. Male antennæ with a disc similar to *suturalis*, but rounder. Female ovipositor exceeding the pygofer by three or four times its width.

Colour: female pale green, the scutellum with a pair of large dark spots within the basal angles, tergum with the disc dark; elytra subhyaline, the apical nervures dark, and the dark tergum showing through. Male with the dark nervures and scutellar spots as in the female, the elytra and sometimes the posterior part of the pronotum irregularly clouded with fuscous or smoky brown.

Described from eleven examples from North Park and several males from Alder, Home, Rist Canon and Palmer Lake, Colo. The females of this form are quite distinct, but the males sometimes approach *continuus* in colour, but they never have the stripe definitely margined as in that form, and the antennal disc is quite different.

*Idiocerus rufus*, var. *cingulatus*, n. var.

Size and form of *rufus* nearly, the elytra slightly longer and narrower, giving the insect, especially the females, much more of a wedge-shaped appearance.

Colour: female, face and vertex pale yellow, with rufous markings; pronotum rufous, a median line, a few submarginal spots and a pair of larger ones on the disc, white; elytra rufous, subhyaline, with two transverse light bands often obscure, but marked by the white nervures,

the anterior band crossing the cross-nervure between the sectors. Male brownish fuscous, the face light, often with a pair of spots on vertex. The submarginal spots on pronotum are united into a median crescent, and the elytra are brownish fuscous, with two broad light bands.

Described from twenty-four specimens from Fort Collins and Buena Vista, Colo. This form has been confused many times with *alternatus* and its allies, but the short ovipositor and the bright rufous pygofers in the female and the broad plates and simple antennæ in the male will readily distinguish it.

*Idiocerus amoenus*, var. *depictus*, n. var.

Size and form of the species nearly, female ovipositor longer and narrower. Male antennal plates slightly smaller.

Colour: female rich creamy yellow; eyes rufous; pronotum, scutellum and narrow scutellar margin to elytra testaceous brown, the colour deepening as you pass back from the vertex, a trace of testaceous on the sutural margin before the apex of clavus. Male pale creamy yellow; basal angles of scutellum, scutellar margins of elytra, a spot before apex of clavus and the apical nervures testaceous. Whole apex of elytra smoky.

Described from two females and one male from Alameda Co., Calif. Collected by E. M. Ehrhorn. This neat little form is remarkably distinct in colour, but the structural characters are not of sufficient value to separate it from *amoenus* on the small amount of material on hand.

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#### NOTES.

Mr. E. DWIGHT SANDERSON, Entomologist of the Delaware Agricultural Experiment Station, Newark, Del., has been appointed Professor of Entomology at the Agricultural and Mechanical College of Texas. His address is now College Station, Brazos Co., Texas.

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Prof. Elmer D. Ball, M. Sc., of the Department of Zoology and Entomology in the State Agricultural College, Fort Collins, Colorado, has been elected to the chair of Animal Biology in the Utah Agricultural College, Logan, Utah.

## CALLOSAMIA ANGULIFERA.

BY A. RADCLIFFE GROTE, HILDESHEIM, GERMANY.

Through the great kindness of a friend, I have received cocoons of *Callosamia angulifera*. These are stemless, and at once distinguishable from those of *C. promethea*. This character bears out the theory (see CAN. ENT. for April, p. 94) that *C. angulifera* is the older, more generalized form in the genus. In my work on the Saturnians, June, 1896, I tried to show that the stemmed cocoons of *Philosamia*, *Attacus* and *C. promethea* were specializations and a more modern development, and gave probable reasons for the acquirement of the habit of fixing the cocoon to the branches, so that it might not fall with the leaf in the autumn (l. c., pp. 15-16; also Plate I.). I have shown that, in a general way, the specialization of the Attacid cocoon keeps pace with the specialization of the imago in the whole group. But these specializations do not move exactly together, and the independence of the different stages in this respect is decidedly indicated. In the case of *C. promethea*, the male has evidently more recently become black, while the cocoon has added the stem wanting in the supposed primitive form: *C. angulifera*. But *Samia* shows no disposition in this direction, and yet the imago must be considered more specialized as compared with *Callosamia*. The specializations are unequal throughout, not only as between the different stages of larva, chrysalis and perfect insect, but development is hastened or retarded in different parts or organs in the same stage. Until this is appreciated, judgment will constantly be at fault in classifying these insects. The characters upon which genera are founded are those of comparative specialization.

In the passage of *Samia* to *Rothschildia*, the tendency to form a stem to the cocoon becomes apparent, evidently controlled by the nature of the food-plant. I have suggested (l. c.) that this habit of fixing the cocoon to the tree by an artificial stem spun round the leaf and fastened to the twig above, is correlated with the increase of the wings in surface dimension. My studies on the species of *Samia* are not concluded. So far it appears not improbable that the Eastern forms, *Co'umbia*, *Gloveri*, *Cecropia*, are developments of the Western *Californica* (*Ceanothi*).

## TWO NEW MEALY-BUGS FROM NEW MEXICO.

BY T. D. A. COCKERELL.

*Phenacoccus cevallia*, n. sp.

♀. Oval, 4 to 5 mm. long, pale olive green, but covered with white secretion, with lateral tassels and thick caudal tassels; placed in alcohol, they stain the liquid pale green; alcoholic specimens appear strongly segmented, with two longitudinal blackish bands, best marked in rather immature specimens. Eyes prominent; skin with many small circular glands; the lateral patches consist of about twelve glands each, but are without spines; a few rather large bristles scattered about the body; legs and antennæ reddish-yellow; denticle on inner side of claw rudimentary, just visible; antennæ 9-jointed, the club 2-jointed. Measurements of antennæ and legs in  $\mu$ : Anterior legs, femur and trochanter 470, tibia 330, tarsus 130; hind legs, femur and trochanter 540, tibia 440, tarsus 135. Antennal joints: (1.) 45-60, (2.) 108-111, (3.) 63-66, (4.) 60, (5.) 72-75, (6.) 51, (7.) 51, (8.) 45, (9.) 67.

Newly-hatched larva very pale lemon-yellow, about twice as long as broad; eyes conspicuous.

*Hab.*—In enormous numbers on *Cevallia sinuata*, near Lea Lake, east of Roswell, N. M., Aug. 21, 1902. Much preyed upon by Coccinellids (*Hyperaspis*) and Chalcidids. It is allied to *P. solenopsis*, but from its large size and abundant secretion, it looks like a *Ceroputo*. Professor Tinsley was with me when the species was discovered, and we both thought it a relative of *C. yuccæ*.

*Pseudococcus Neomexicanus* (Tinsley), var. *alkalinus*, n. var.

♀. About  $2\frac{1}{2}$  mm. long and  $1\frac{1}{4}$  broad, covered with mealy-white secretion, with short, thick, cottony caudal tassels, and lateral tassels posteriorly; secreting a thin but dense white sac, which covers all but the hind end of the insect. These sacs are often irregularly stained with bright yellow. ♀ (after boiling in water and mounting in oil of cloves) bright orange; antennæ and legs light yellowish-brown; no produced caudal tubercles; labium  $120\mu$  long and about 78 broad; eyes prominent; caudal bristles about  $75\mu$  long; bristles of anal ring about  $66\mu$ ; legs quite stout, breadth of anterior tibia  $36\mu$ ; claw with no denticle on inner side; claw digitules very slender; no distinctly knobbed tarsal digitules; antennæ 8-jointed. Measurements of legs and antennæ in  $\mu$ : Anterior legs, femur and trochanter 210, tibia 135, tarsus 69; hind legs, femur and trochanter 231, tibia 174, tarsus 78. Antennal segments: (1.) 45-54, (2.) 48-54, (3.) 36-41, (4.) 24-30, (5.) 24, (6.) 22-24, (7.) 24-25, (8.) 66-78.

Eggs red; eggs in body of ♀ contained well-developed larvæ, and are about 336  $\mu$  long and 180 broad.

*Hab.*—Roswell, N. M., on a low grass in an alkaline spot, abundant on the leaves and stems, Aug. 24, 1902. I believe this is a distinct species, but it is so close to *P. Neomexicanus* (*Dactylopius Kingii Neomexicanus*, Tinsley, 1898) that no harm will be done by treating it as a variety for the present. It has a Chalcidid parasite, a species with very pale legs, and the apical portion of the antennæ white, the basal part black.

Two other species allied to the present one are *Pseudococcus roseotinctus* (*Dactylopius roseotinctus*, T. & W. Ckll.) and *P. salinus* (*D. salinus*, Ckll.). All these form a little group with a characteristic type of antenna, different from that of the Eastern mealy-bugs.

NOTES ON SOME GENERIC NAMES EMPLOYED BY SERVILLE, IN THE REVUE METHODIQUE, AND FIEBER, IN THE SYNOPSIS DU EUROPAISCHEN ORTHOPTERAN.

BY JAMES A. G. REHN, PHILADELPHIA, PA.

As has been shown by several previous writers, the Synopsis published in instalments by Fieber, in *Lotos*, Volume III., all appeared on or before August, 1853. Such being the case, all his new generic names have precedence over those of L. H. Fischer,\* the preface of whose work bears the date, November, 1853, and which is unlikely to have appeared before 1854.

FORFICULIDÆ.

CHELIDOURA, Serville. *Ann. Sci. Nat.*, XXII., p. 36, 1831.

Usually quoted in the corrected form used by Burmeister—*Chelidura*.

BLATTIDÆ.

PERISPHERUS, Serville. *Ibid.*, p. 44.

Usually quoted as *Perispharia*, an emendation.

MANTIDÆ.

BLEPHARIS, Serville. *Ibid.*, p. 47.

As this name is preoccupied by *Blepharis*, Cuvier (*Regn. Anim.*, II., p. 322, 1817), I propose *Blepharopsis* in its place.

\*Orthoptera Europaea, Lipsiæ.



## PHASMIDÆ.

CYPHOCRANA, Serville. Ibid., p. 60.

Usually quoted as *Cyphocrania*.

## ACRIDIDÆ.

CALEPHORUS, Fieber. Lotos, III., p. 97, May, 1853.

Antedates *Oxycoryphus*, Fischer (Orthopt. Europ., p. 311).

CHORTHIPPUS, Fieber. Ibid., p. 100, May, 1853.

Antedates *Stenobothrus*, Fischer (Ibid., p. 313).

DOCIOSTAURUS, Fieber. Ibid., p. 118, June, 1853.

Antedates *Stauronotus*, Fischer (Ibid., p. 351).

AILOLOPUS, Fieber. Ibid., p. 100, May, 1853.

Antedates *Epacromia*, Fischer (Ibid., p. 360).

PÆKILOCERUS, Serville. Ann. Sci. Nat., XXII., p. 275, 1831.

Usually quoted as *Pæcilocerus*.

PRIONOTROPIS, Fieber. Lotos, III., p. 127, June, 1853.

Antedates *Cuculligera*, Fischer (Orthopt. Europ., p. 390).

PELECYCLUS, Fieber. Ibid., p. 119, June, 1853.

Antedates *Platyphyma*, Fischer (Ibid., p. 373).\*

OPSHOMALA, Serville. Ann. Sci. Nat., p. 267, 1831.

Usually quoted as *Opsomala* or *Opomala*.

CALLIPTAMUS, Serville (Ibid., p. 284).

Usually quoted as *Calliptenus* or *Caloptenus*.

EYPREPOCNEMIS, Fieber. Lotos, III., p. 98, May, 1853.

Usually quoted in the emended form, *Euprepocnemis*.

## TETTIGONIDÆ.

POLYSARCUS, Fieber. Ibid., p. 174, August, 1853.

Antedates *Orphanina*, Fischer (Orthopt. Europ., p. 222).

XIPHIDION, Serville. Ann. Sci. Nat., XXII., p. 159, 1831.

Usually quoted as *Xiphidium*.

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\*Scudder (Proc. U. S. Nat. Mus., XX., p. 96), in treating the name *Podisma*, Latreille, came to the conclusion that *Pezotettix*, Burmeister, should replace *Platyphyma*, Fischer. As there set forth, *Podisma* possessed two originally-included species, which two, "and these only," were the species on which Burmeister's genus *Pezotettix* was founded. In such cases the golden rule, "once a synonym, always a synonym," should be applied, and *Pezotettix* should be relegated to its true position as a synonym of *Podisma*, subsequent restriction having no validity where originally included species are identical.

THE BEE GENUS *DIALICTUS*.

BY J. C. CRAWFORD, JR., WEST POINT, NEBR.

Table for the separation of the species :

Black.....	<i>lustrans</i> , Ckll.
Greenish or bluish.	
Tegulae dark.	
Bluish; abdomen with metallic lustre; face narrow..	<i>Theodori</i> , n. sp.
Greenish; abdomen without metallic reflections; face	
broader.....	<i>occidentalis</i> .
	n. n. for <i>anomalus</i> .
	Ckll. (non Robt.).
Tegulae testaceous.....	<i>anomalus</i> , Robt.

*D. anomalus*, Robt. Specimens from Dr. Graenicher, collected at Milwaukee, were examined.

*D. occidentalis*, n. n. for *D. anomalus*, Ckll.

Ann. and Mag. Nat. Hist., Ser. 7, VII, 126 (Jan., 1901).

This differs from the true *anomalus* in its larger size, more densely punctured mesothorax, finer and more numerous lines on the metathorax, dark tegulae, abdomen distinctly punctured, quite closely on the second segment; denser pubescence on the abdomen nearly concealing the surface on the apical segments; apical margins of abdominal segments testaceous.

*D. Theodori*, n. sp.—♀. Head and thorax blue, face closely and rather coarsely punctured and with sparse white pubescence; antennae dark; flagellum obscurely ferruginous beneath toward apex; mesothorax rather sparsely and finely punctured and finely tessellate; metathorax rugose on base, rugae not reaching apex; tegulae dark; wings hyaline, nervures yellowish; legs dark, apical joints of tarsi ferruginous; inner spur of hind tibiae with 4 long teeth; pubescence of legs white; abdomen black, thinly clothed with white pubescence, more dense apically, and with metallic reflections; apical margins of segments testaceous.

Type.—One specimen (Las Vegas, N. M., May 29, 1902), on *Convolvulus incanus*. Miss Pearl Hitchcock, coll.

Dedicated to Prof. Cockerell, from whom it was received.

## NEW SPECIES OF SEMIOSCOPIS.

BY HARRISON G. DYAR, WASHINGTON, D. C.

The following species of *Semioscopia* (*Epigraphia*) seem undescribed. They were sent for names by Messrs. F. A. and H. D. Merrick, of New Brighton, Pennsylvania, and have been donated by them to the National Museum. These new species closely resemble several of the European ones, yet seem all specifically separable.

*Synopsis of North American species of Semioscopia.*

Wings sharply trigonate, apex pointed, costa straight.

Discal mark a curved bar.

Discal mark continued to base of wing by a long, bent black bar..... *Packardella*.

This bar sharply abbreviated at one-third from base... *Merricella*.

This bar broken into rods and dots, obscurely reaching base..... *aurorella*.

Discal mark not produced toward base in a bar..... *megamicrella*.

Discal mark a pair of superposed dots..... *inornata*.

Wings not trigonate, costa arched at base as in *Depressaria*. ... *Allenella*.

*S. Packardella*, Clem. (*eruditella*, Grt.).

Two specimens from Michigan (C. P. Gillette) are in the National Museum.

*S. Merricella*, n. sp.

Palpi blackish, second joint whitish at base and tip, third joint whitish, a black spot outwardly at base and black ring before tip; thorax gray, abdomen sordid ochreous. Fore wings light shining gray, slightly shaded with brown, darkly so beyond end of cell and on costa before apex, irrorated rather uniformly with blackish. A large, curved, black bar in the cell, reversed as to curvature with the discal mark; a row of irregular terminal black spots between the veins. Hind wings and under side silky gray, fringes paler. Expanse 27 to 31 mm.

Two specimens, New Brighton, Pa. (H. D. Merrick), March 15 and 22, 1902.

U. S. Nat. Mus., type No. 6609.

*S. aurorella*, n. sp.

Palpi essentially as in the preceding. Wings silky gray, fore wings roseate tinged, the basal two-thirds of costa broadly and top of head more

whitish. Wing finely irrorated with black; a curved discal streak, two superposed dashes in the cell, a basal subcostal dash and one from base below median vein to opposite middle of cell, black; three triangularly placed short dashes before apex, an ill-defined subterminal and a terminal row of intravenular black dots. Fringes pale, slightly roseate. Expanse 25 to 30 mm.

Four specimens, New Brighton, Pa. (H. D. Merrick), March 20, 21 and 27, 1902.

U. S. Nat. Mus., type No. 6610.

*S. megamicrella*, n. sp.

Palpi as in the preceding. Fore wings whitish gray, slightly shaded with fuscous, especially beyond end of cell and with scattered brown scales; fine black scales along costal edge and a shaded spot above discal mark, which is curved and black, in one of the specimens (on one side only), broken into a pair of dots; two superposed dots before middle of cell; three subapical dots in a triangle continued as a submarginal row; a terminal row of dots. Hind wings silky gray, fringe pale. Expanse 18 to 25 mm.

Eight specimens, New Brighton, Pa. (H. D. Merrick), March 7, 10, 20, 21 and 24, 1902.

U. S. Nat. Mus., type No. 6611.

The smaller specimens were sent by Mr. Merrick under a different number, but, though the markings are somewhat confused and the colour a little darker, I do not find them specifically distinct.

*S. inornata*, Wals.

This is possibly only a varietal form of the preceding, but none of my specimens (of *megamicrella*) are anywhere nearly so large, while the discal mark is a curved streak except on one wing of a small specimen, where it is resolved into dots. There are no specimens of *inornata* in the National Museum.

*S. Allenella*, Wals.

This species looks like a *Depressaria* in its wing shape and markings. The National Museum has an old specimen, determined by Lord Walsingham and labelled "oak, Aug. 11, 1884"; also from New Brighton, Pa. (H. D. Merrick), May 12 and 22, 1902, and Centre Harbor, N. H. (H. G. Dyar), July 22, 1902.

## SOME NEW OR LITTLE-KNOWN BEES.—IV.

BY CHARLES ROBERTSON, CARLINVILLE, ILLINOIS.

## ANTHEMURGUS, gn. nov.

*Glossa lanceolate*, shorter than mentum; paraglossæ reaching to joint 4 of labial palpi; maxillary palpi six-jointed, longer than lamina, joints short; labial palpi with joints subequal, first one robust; marginal cell about as long as first discoidal, obliquely truncate, appendiculate; cubital cells equal, second receiving the first recurrent nervure about one-third from base and the second near apex; facial foveæ present in both sexes; tibial scopa of female thin, with rather long simple hairs.

*A. passifloræ*, sp. nov.—♀. Black, shining; head coarsely punctured; mesonotum closely and finely punctured, also with some scattered coarser punctures, trisulcate anteriorly; metathorax with the disc rather finely reticulated, the sides finely punctured; abdomen with apical margins of segments 1-4 shining, impunctate, segment 1 sparsely, 2-5 more closely, punctured; labrum with shining space broader at base and apex; mandibles rufous; apical half of wings clouded; middle metatarsus broader than hind one; middle spur finely pectinate, about one-fifth the length of the metatarsus; pubescence thin, short, longer on the legs, sides of metathorax and segments 5-6 of abdomen; pale, except on segments 5-6, where it is blackish. Length, 8 mm.

♂.—Resembles the female; mandibles, anterior tibiæ in front, and sometimes middle ones, and all the tarsi, reddish; a longitudinal yellow stripe on the clypeus and on each side of face. Length, 8 mm.

Carlinville, Illinois; 7 ♀, 5 ♂ specimens.

This species is oligotropic; the female gets her pollen exclusively from flowers of *Passiflora lutea*.

*Perditella boltoniæ*, sp. nov.—♀. Head and thorax greenish, shining, finely roughened, sparsely punctured; pubescence thin, pale; basal joint of labial palpi longer than the next three together; mandibles, except base, rufous; clypeus whitish; facial foveæ linear; legs dark, tarsi testaceous, claws simple; tegulæ pale testaceous; wings hyaline, nervures pale, subcostal nervure and borders of stigma and marginal cell darker; marginal and first cubital cells about equal, a little shorter than stigma; cubital cell 2 narrowed about  $\frac{2}{3}$  towards marginal, receiving recurrent nervure 1 just within, recurrent 2 interstitial with the second transverse cubital; third discoidal cell present; abdomen depressed, obovate, blackish, segments 2-3 each with a linear whitish band on each side of base. Length, 5 mm.

♂.—Resembles the female; third discoidal cell wanting; second cubital cell more strongly narrowed above; cheeks dentate; claws cleft; mandibles, except tips, labrum, clypeus, two small spots on each side above, scape in front, anterior tibiæ in front, and tarsi, whitish; abdomen without fasciæ, apical margins of segments narrowly pale testaceous, apex reddish. Length, 5 mm.

Carlinville, Illinois; 1 ♀, 5 ♂ specimens. Three male specimens have the scape dark, one has the labrum dark, one has no spots on face outside of clypeus. The second recurrent nervure in the male is evident in certain lights, but there is no thickening.

The female collects pollen of *Boltonia asteroides*. I regard it as an oligotropic visitor of that plant, but the female may get pollen from some other species of Compositæ.

*Anthidium psoraleæ*, n. sp.—♀. Black, rather opaque, closely punctured; wings nearly hyaline, basal nervure ending before transverse medial, second recurrent nervure interstitial with second cubital; pulvilli wanting; mandibles with seven teeth; apex of clypeus with two teeth on each side; segment 6 of abdomen longitudinally carinate, apex bidentate, strongly sinuate laterally, with a lateral tooth; yellowish white ornaments as follows: longitudinal stripe on each side of vertex, spot on tegulæ in front, line above, spot on each side of base of scutellum, and two lines on apical margin, lateral fasciæ greatly indented anteriorly on segments 2-5, broken in two on 1. Length, 11 mm.

♂. Segment 6 of abdomen with an incurved tooth on each side, 7 with three prominent teeth, lateral ones broad, with an incurved point, median one slender; ventral segments 4-5 emarginate, 6 with broad produced median portion, sides of its base sinuate; yellowish-white ornaments as follows: mandibles, clypeus, sides of face, longitudinal stripe on each side of vertex, dot on tubercles tegulæ in front, two lines on scutellum, dot on anterior and middle knees, apex of tibiæ, metatarsi, two large lateral and two small discal spots on segment 1 of abdomen, anteriorly indented lateral fasciæ on segments 2-5, and two discal comma-shaped marks on 6. Length, 12 mm.

Carlinville, Illinois; 5 ♀, 14 ♂ specimens. One female has no line above tegulæ, three have no spots on sides of base of scutellum. One male has no lines on scutellum, four have no dots on anterior knees, five have none on middle knees, twelve have no discal spots on segment 1 of abdomen, one has the lateral fasciæ on segment 2 broken in two, four have no dots on tubercles.



*Dianthidium boreale*, n.sp.—♂. Closely resembles *D. notatum*, Latr., but the abdominal segments 6–7 have a median carina, which in the latter terminates in a tubercle; segment 6 has on each side an elevated portion, each terminating in a discal subapical tooth and a lateral apical one; pulvilli present; wings clouded, basal nervure almost interstitial with transverse medial, second recurrent nervure passing beyond second cubital; antennæ black; legs red, anterior and middle knees, apex of tibiæ and metatarsi, yellow; other yellow ornaments as follows: mandibles, face below antennæ, transverse line on vertex, tubercles, tegulæ in front, line above, four spots on scutel, large spot on each side of segment 1, arcuate fascia on each side of 2, two discal and two lateral spots on each side of 3–5, a large spot on each side of 6 covering the elevated portion, and all except base of 7. Length, 8 mm.

Carlinville, Illinois; 1 ♂ specimen.

Among several other good characters of *Dianthidium* may be mentioned the well-developed pulvilli.

*Stelidium* gn. nov., *trypetinum* sp. nov.—♀. Black; pubescence thin, pale; punctures coarse and close; mandibles narrow, tridentate, rufous before apex; maxillary palpi one-jointed; cubital cell 2 longer than 1, receiving both recurrent nervures about equally distant from base and apex; scutel simple; abdomen strongly conical; segment 6 longer than 5, apical margin carinate; ventral segment 6 longer than 5, nearly as long as wide, produced beyond dorsal segment, with a subapical carina; nearly obsolete whitish ornaments as follows: narrow anterior orbits, transverse spot on each side of vertex, four widely-separated equidistant spots near apical margins of segments 1–3. Length, 5 mm.

Carlinville, Illinois; 2 ♀ specimens. The venation, structure of abdomen, and the ornaments mark this as quite a peculiar form. I am quite sure it is an inquiline of *Trypetes carinatus*.

*Melissodes vernoniae*, sp. nov.—♀. Black, clothed with pale whitish or griseous pubescence; some black hairs on the vertex in front, a subquadrate patch on the mesonotum and the scutel also with black hairs; hind metatarsi blackish beneath; segment 2 of abdomen has a narrow basal and a broader median whitish fascia; segments 3 and 4 with broad fasciæ reaching the apex of 4, and nearly reaching the apex of 3; segments 5 and 6 with pubescence black or fuscous; wings hyaline, nervures testaceous; middle of mandibles rufous; flagellum testaceous beneath. Length, 12–14 mm.

♂.—Resembles the female; pubescence nearly white throughout, thin on mesonotum posteriorly and on scutellum where it is sometimes a little blackish; clypeus, spot on base of mandibles and on labrum white; antennae yellowish, darker above, joint 3 about twice as long as 2; wings hyaline, nervure pale, much paler than in female; segments of abdomen with broad, pale, testaceous apical margins, 2-6 with submedian narrow, arcuate, whitish pubescent fasciae, segments 5-7 with lateral spines. Length, 13 mm.

Carlinville, Illinois; 21 ♀, 15 ♂ specimens.

The female gets her pollen exclusively from *Vernonia fasciculata*. The male is quite white and resembles a large specimen of *M. nivea*.

In my neighbourhood there are three species of bees which have been referred to *Xenoglossa*. *Melissodes strenua*, Cr., is evidently a true *Xenoglossa*. It is proposed here to make *Macrocera pruinosa*, Say, the type of a new genus, *Peponapis*, and *X. ipomææ* the type of a new genus, *Cemolobus*. In its group *Xenoglossa* is remarkable for having the antennae of the male of the same form as in the female. In *X. strenua* the secondary sexual characters are reduced to a minimum, the mandibles, antennae and claws of the male being about the same as in the female, and the clypeus of the female usually marked with yellow. The three species may be separated as follows:

#### Females.

Claws with a short inner tooth, that of the hind claw about one-fourth as long as the outer division; clypeus trilobed; mandibles with a distinct exterior angle; joint 2 of maxillary palpi nearly as long as 3-5, 4 nearly as long as 4+5; scopa nearly black; abdomen nearly black, with appressed glittering hairs; first cubital cell shorter than the third, hardly longer than the second.....*C. ipomææ*.

Claws cleft, inner tooth of hind claw more than one-half as long as the outer division; clypeus entire; scopa ochraceous.....1.

1. Mandibles with an internal tooth at base; maxillary palpi with joints 2-5 regularly diminishing in length; abdomen with more or less interrupted fasciae of appressed ochraceous pubescence; cubital cell 1 a little shorter than 3, much longer than 2.....*X. strenua*.  
Mandibles at apex bidentate; joints 2 and 3 of maxillary palpi subequal, 3 = 4 + 5; segments 2-4 of abdomen with whitish pubescent fasciae; cubital cell 1 about as long as 3, twice as long as 2.....*P. pruinosa*.

## Males.

Hind claws long, with a very short inner tooth; hind metatarsus arcuate, bevelled at the expense of its posterior inferior border, produced anteriorly; mandibles at apex bidentate, exterior angle spined; clypeus trilobed, with transverse apical whitish band; joint 3 of antennæ about as long as 4, 5-12 slightly diminishing in length; segments 6 and 7 of abdomen with dentiform lateral apical angles.....*C. impomæ*.

Hind claws cleft; hind metatarsus simple; clypeus entire.....1.

1. Joint 3 of antennæ = 4 + 5; base of mandibles yellow, with an internal tooth; clypeus largely yellow; segments 5 and 6 of abdomen with lateral basal spines, stronger on 6.....*X. strenua*.

Joint 3 of antennæ about one-third as long as 4, 5-12 slightly diminishing in length; mandibles tridentate, base black; clypeus with yellowish spot; apex of abdomen without spines.. *P. pruinosa*.

## DESCRIPTIONS OF NORTH AMERICAN BEES.

BY H. L. VIERECK, PHILADELPHIA, PA.

*Coelioxys Foxii*, n. sp.

*Coelioxys vigilans*, Fox, not Sm. Tr. Am. Ent. Soc., XVIII., 344, 1891, ♀ ♂.

Conspicuous by its deeply-punctured thoracic dorsum and the orange to yellowish pubescence.

♀. Length, 10.5 mm. Clypeus rugose, with close, large, poorly-defined punctures, covered with a fine whitish pubescence, and having a whitish moustache; sides of the face covered with a yellowish appressed pubescence; near the ocelli this becomes erect; around the latter the hairs are dark brown, and form an erect fringe; a raised space in front of anterior ocellus, tapering down in front to a point terminating between insertion of antennæ, has a longitudinal impressed line along the middle on its lower half, and branches up to on each side of the anterior ocellus impunctate, dullish, the space between and surrounding punctured; an impunctate space between lateral ocelli and eye margins; top of the head punctured, dullish, the punctures smaller than those on dorsulum, almost bare; cheeks with appressed pubescence paler than that on sides of face. Dorsum of thorax with large deep punctures, shining, the punctures on dorsulum usually well separated, those on scutellum sparse, a narrow longitudinal area on the middle of scutellum impunctate; a semi-circular collection of appressed pubescence on scutellum, a spot of

the same adjoining the tegulae and a line on anterior margin of dorsulum orange colour. The rest of the dorsum with inconspicuous black hairs. Posterior border of scutellum with a sharp edge, only slightly produced medially, the lateral teeth short and blunt. The pleura covered with pubescence similar to that on cheeks, only so thick as to obscure the tegument on the anterior and posterior borders of the mesopleura, which are deeply punctured and dullish; the legs covered with a white pubescence, that on the tibiae and tarsi within golden. Wings darkened brownish, especially near the margins, nervures and stigma dark brown. First adominal segment with a groove on the anterior edge formed by the sharp edge and the almost ridge curve in back of the edge, with distinct, small, separated punctures; all of abdomen polished, the apical segment less than one and a half times as long as broad at base, tapering to a blunt point at apex, slightly pinched on the sides at the middle, a median longitudinal raised line on posterior half, an impunctate line on anterior half; the punctuation on the narrow part of apical segment indistinct, that on the broader half distinct, fine, the punctures separated; the rest of the segments with punctures only on the anterior and posterior margins; all the segments, except the apical one, with a narrow apical band of yellowish appressed pubescence, a line of appressed pubescence on each side of apical dorsal segment; the ventral segments with apical bands.

Black, mandibles, tegulae, legs, basal segment and ventral segment dark ferruginous.

♂. Length, 8.5 mm. Essentially the same as the ♀ in sculpture and coloration, with the usual exception in structural characters incident to this sex; the face uniformly covered with thick appressed pubescence; the lateral scutellar spines more produced; apical dorsal segment less than one and a half times as long as broad, at apex drawn out into four sharp spines, the emargination not so deep, more semicircular, the width from spine to spine a little more than half the width of the apical segment at base; the upper spines a little shorter than the lower ones, one spine on each side long and narrow, the broad median furrow extending to within a short distance of the base of the apical segment.

Types: Coll. Am. Ent. Society. Type locality, Port Antonio (♀), Jamaica (W. J. Fox).

The ♂ is from Kingston, Jamaica. Both specimens are part of a collection made in Jamaica during April, 1891, by Mr. C. W. Johnson and Mr. W. J. Fox.

In sculpture and structure this species comes nearest to *C. abdominalis*, Guer., but that has the abdomen all red, is larger and different in various details.

*Coelioxys Slossoni*, n. sp.

Head and thorax black, dullish; abdomen shining, first three segments ferruginous, the rest black; wings fulvous, darker apically; antennæ dark brown to black.

♀. Length, 12 mm. Face covered with appressed whitish pubescence, which hides the surface of the tegument; head above an imaginary line across posterior ocelli deeply punctured, the punctures separated irregularly, none very far apart. There is an impunctate line extending down to the margin of the eye from each lateral ocellus; a compact, spade-shaped, raised area in front of anterior ocellus has its borders impunctate, dull, the space within punctured. Cheeks punctured, with white appressed pubescence not so dense as on the face; dorsulum with deep, good-sized punctures not all the same distance apart, some very close, not at all widely separated, an impressed line over the anterior half of dorsulum in the middle, a narrow band of yellow pubescence extends to each side of the impressed line, curved and meeting the tegulæ at the sides; scutellum punctured, much like dorsulum, duller, the spines short and rounded. Mesopleura flattened in front, giving the side a strong edge, the sides of mesopleura punctured, much like the dorsulum, pubescence very sparse, excepting on the margins, where it is abundant, and on the sides of the metathorax. Wings with space between first transverse cubitus and first recurrent nervure on the cubitus a little greater than that between the second transverse cubitus and the second recurrent nervure on the cubitus; transverse median nervure interstitial; nervures and stigma dark brown, almost black; tegulæ testaceous. Abdomen about twice as long as broad at base, first segment with well-defined large and small punctures, the larger ones a little smaller than those on dorsulum, second segment with much the same-sized punctures as those on the first, an impunctate narrow band across the middle. On the remaining segments the pattern is the same, excepting the apical segment, the puncture on each segment a little smaller than on the preceding, the impunctate band wider; apical segment with a medial longitudinal impunctate raised line; apical segment less than twice as long as broad at base, its outline that of a cone slightly pinched in the middle, the apex rounded; dorsal

segments, except the apical one, with a narrow white fascia, narrowest in the middle, the fascia on first segment narrow from side to side.

Black; legs from ferruginous to testaceous, chiefly a dark shade of the latter; anterior and median coxæ black. The legs have a whitish pubescence, except on the inner side of tibiæ and all of tarsi, where the pubescence is golden.

♂. Length, 11.5 mm. Exactly like the ♀, except for the usual sexual characters; pubescence on face abundant and not appressed; dorsal apical segment with six spines, one on each side at base testaceous, the four at apex black, simple, the lower pair longer than the upper, sharp, the upper pair short, blunt; scutellar spines longer than in ♀, broader at apex than at base.

Types: Coll. Am. Ent. Society. The ♀ deposited by Mr. Fox.

Type locality, Lake Worth, Florida (Mrs. A. T. Slosson).

The male is labeled "Fla." Two ♀ ♀ from Lake Worth; the co-type is identical with the type.

*Megachile manumuskini*, n. sp.

Thorax shining, punctured; scopa white, on apical segment black; inner side of tarsi in both sexes brilliant brownish.

♀. Length, 14 mm. Margin of clypeus almost even, the clypeus and a small space above closely punctured, the surface shining and almost bare, the rest of the face up to the ocelli indistinctly punctured, covered with an erect whitish pubescence, which extends down and covers the lower corners of the clypeus; top of the head not so closely punctured as the clypeus, shining, sparsely covered with black hairs; checks indistinctly punctured, covered with erect pubescence whiter than that on the face; space between posterior ocelli seemingly a little greater than that between them and eye margins; mandibles the shape of an obtuse angled triangle, with four teeth, the upper surface separated from the lateral surface by a raised opaque line, the upper surface with drawn-out punctures; antennæ with the first joint of the flagellum a little longer than the second. Dorsum of thorax shining, punctures on dorsulum close together; on the sides, in front, in the middle and behind the punctures are well defined and separated; punctures on scutellum distinct, closer than those on the middle of the thorax; the thorax above almost bare in the middle, near the margins with sparse black hairs, surrounded by white hairs on the margins; surface of the rest of the thorax indistinctly sculptured; metathorax almost smooth, opaque, almost



hidden by the abundant white pubescence. The legs, except the tarsi in back, largely covered with short, almost appressed whitish pubescence. Wings brownish hyaline, nervures very dark brown; tegulæ shining, punctured. Abdomen shining, the dorsal segments with a polished, then a punctured band, an apical subopaque band finely punctured; first segment with erect whitish pubescence, the second dorsal segment with short whitish pubescence at the base, a narrow whitish band of appressed pubescence on the apical border of the punctured band; segments two, three and four with similar fasciæ, otherwise the segments have short, black, erect hairs in abundance; the apical segment is finely, closely punctured, slightly impressed on each side, black haired. Almost entirely black, claws dark brown in part.

♂. Length, 11.5 mm. Very similar to the female; hair on face yellowish, the clypeus with a long moustache, hairs on top of head pale and fine; first joint of flagellum plainly shorter than the second; anterior coxæ armed with a prominent spine; apical dorsal segment with a broad, uneven, elliptical emargination, the sides of the segment with large teeth, the right side having but one, the left side two; the pointed process of apical ventral segment long; when looked at from back, its tip is on a level with the tips of the sides of the apical dorsal segment.

Types: Coll. Acad. Nat. Sciences, Philadelphia.

Type locality, Manumuskine, New Jersey, June 24, 1901 (E. Daecke). Co-type ♀, same date, same place. One ♂, Clementon, N. J., June 5, 1901; DaCosta, N. J., July 14, 1901. The thoracic pubescence in these specimens has an ochreous tint. Two ♂♂, Iona, N. J., June 16, 1902. In one of these specimens the lateral processes and the apical process of apex of abdomen are abbreviated, but hold the same proportion to each other as the typical specimens. The species compares well with *M. frugalis*, Cress., but that differs in the distinct punctuation of head and thorax with shining surface; the emargination is regular, semicircular, the tooth beneath short. The type was compared with the type of *M. frugalis*, Cress., ♂, in the U. S. National Museum.

Frederick Smith described three species of the genus *Colletes* from North America. Up to the present time only one species, *C. thoracicus*, appears to have been identified. I submit descriptions of what are taken to be *C. mandibularis* and *C. nitidus*, the remaining species.

*Colletes mandibularis*, Sm.

*Colletes mandibularis*, Sm. Brit. Mus. Cat., I., 5, 1853. ♂. Type locality, Georgia.

♀. Length, 8 mm. Clypeus almost bare, shining, with punctures lengthened and often confluent, near the margins the punctures are more regular, the rest of the face covered with a dirty-looking pubescence, not long nor so thick as to obscure the surface, which is so closely punctured as to have a rugose appearance; the head above shining, indistinctly punctured, the pubescence longer and sparser than on face, rather yellowish; labrum with a distinct dent in the middle, to the sides polished and with traces of dents; mandibles grooved, with an almost obsolete tooth within the apex; the cheeks with a paler pubescence, the sculpture indistinct; first joint of flagellum distinctly longer than the second; hardly any space between eyes and base of mandibles; dorsulum shining, with close, distinct, deep punctures, punctures sparse in the middle of posterior half; scutellum with a few punctures. Mesopleura with distinct punctures, closer than on the dorsulum; disc of metathorax divided into pits, the middle one almost oblong, the largest, the lateral each narrower than the one before; enclosure of posterior face of metathorax with a broad neck, its surface not perfectly smooth, but shining, the neighbouring areas indistinctly sculptured, less shining than the middle area; the thorax above with a short yellowish pubescence, that on the sides whitish, the same on the legs. Abdomen subopaque, very finely sculptured with indistinct punctures, those on first segment not so close as on the rest, therefore it is more shining; the base of abdomen pubescent, much like the dorsum of thorax, the other segments with a thin, light, appressed pubescence, except the apical segment; all with a distinct fascia of appressed yellowish pubescence; ultimate segment with brown hair. Black mandibles and tibiæ brownish; wings yellowish, nervures brown; stigma paler; first recurrent nervure received by the second submarginal cell a little before the middle.

♂. Length, 7 mm. Excepting the ordinary sexual characters, the male fits the description of the ♀. Face below antennæ hidden with a long, yellowish pubescence; pits on disc of metathorax narrower; tarsi testaceous.

Four specimens from Georgia (Morrison), Coll. Am. Ent. Soc.

*Colletes nitidus*, Sm.

*Colletes nitidus*, Sm. New Sp. Hym., B. M., p. 1, 1879, ♀ ♂. Type locality, E. Florida.

♂. Length, 8 mm. Face below antennæ hidden by long, pale pubescence, faintly yellowish; face above indistinctly sculptured,

pubescence thinner and darker than that below; top of the head shining, also indistinctly sculptured; cheeks roughened, with white pubescence; labrum with a median dimple; first joint of flagellum equal to the length of the second; space between eyes and base of mandibles very narrow; dorsulum shining, with small, well-separated punctures; scutellum similar. Mesopleura closely punctured, shining; disc of metathorax divided in the middle by a sharp longitudinal ridge, the space on each side divided into pits by less conspicuous ridges; enclosure funnel-shaped, the neck narrow, about twice as long as wide at base, the surface polished, the neighbouring areas shining, indistinctly sculptured in spots; thorax above covered with a slightly yellowish pubescence; the sides, the metathorax in back and the legs covered with white pubescence; wings yellowish hyaline, nervures light brown, the stigma almost testaceous; first recurrent nervure received a little beyond the middle of second submarginal cell. First abdominal segment highly polished, with very fine, widely-separated punctures, the pubescence very thin and long, whitish, the rest of the segments closely, indistinctly punctured, the pubescence whitish, short and lying on the surface, the fasciæ formed by the hairs not at all prominent; apical segment with whitish appressed pubescence.

Black; tarsi and claws almost testaceous; flagellum very deep brown.

One ♂ specimen from College Park, Maryland, September, 1892. (Received through Mr. Quaintance.)

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#### BOOK NOTICE.

CATERPILLARS AND THEIR MOTHS.—By Ida Mitchell Eliot and Caroline Gray Soule: The Century Co., New York; 302 pages 8vo., 80 plates. (Price, \$2.00 net).

This is a very interesting and satisfactory book, written in an entertaining manner and full of useful information for any one who is engaged in rearing moths and studying their life-histories. The great value of the work consists in its evident originality; the writers give us their own experiences and record their failures as well as successes. The first portion of the volume describes the simple apparatus employed in rearing caterpillars, how to take care of them, where to look for them, and tells as much as the ordinary collector requires to know about the eggs,

caterpillars, cocoons, pupæ, and finally the moths. The perusal of these chapters will greatly help any one trying to rear Lepidoptera and enable him to avoid many mistakes that he would otherwise be sure to make. A sufficient description is given of the external structure of these insects in their various stages to enable the reader to make intelligent records of his observations which will have some scientific value. A chapter is also devoted to the Parasites which so often disappoint one who has been patiently rearing a caterpillar and hoping to secure a perfect specimen of some rare moth. The following passage gives some admirable advice: "The best part of any one's equipment is the power of observation—quick seeing, unflinching carefulness, exactness of noticing and stating, and the patience which works hard and well, can bear the failure of its best plans and experiments, and begin over again next season with as much zest as before. Faithfulness, accuracy and patience are absolutely necessary to satisfactory work of this kind."

The second and larger portion of the volume records the life-histories, more or less complete, of about fifty species of moths belonging to the Sphinges, Bombyces and Noctuids, and tells how they were reared and brought safely to the perfect state. These descriptions are remarkably good and, what is more, highly interesting, being written in simple language free from all technicalities that are not necessary for accurate statements. The illustrations are regarded by the publishers as a unique feature of the book. They are 80 in number, beautifully executed photogravures, many of them perfect representations of the insect, for instance the moth and caterpillar of *Sphinx Kalmia* (p. 136), but a large number, we are sorry to say, are most disappointing, the specimens photographed being badly set, often imperfect and in some cases almost unrecognizable. As examples we may mention the moths of *Amphion nesus*, *Ampelophaga myron*, and *Leucartia acraea*. The caterpillars are nearly always beautifully depicted, and it seems a great pity that perfect and properly-set specimens of the moths were not chosen for representation. These defects impair the beauty but do not affect the value of the book, which will be a source of pleasure and a storehouse of information to every nature-lover who takes an interest in watching and studying the actual living objects and is not content with mere dead and dried specimens.

